

SUPPLEMENTAL INFORMATION #1

For Zoning Administrator Agenda of:
December 3, 2020

<input checked="" type="checkbox"/>	Consent Agenda Item	<u>C4</u>
<input type="checkbox"/>	Continued Hearing Item	
<input type="checkbox"/>	Public Hearing Item	
<input type="checkbox"/>	Department Report	
<input type="checkbox"/>	Old Business	

Re: Ft. Apache, LLC Special Permit

Record Number: PLN-2019-15369
Assessor Parcel Number: 105-081-011
29615 Mattole Road, Petrolia

Attached for the Zoning Administrator's record and review is the following supplementary information items:

1. Letter from adjacent landowner John Williams, who holds a PhD in Physical Geography and has worked as a surface water hydrologist, analyzing the well pump test conducted by Watson Well Drilling. Mr. Williams has a well on his parcel located 361 feet from the test well that is the source of irrigation water for the cultivation project. He argues the well test does not provide meaningful results given several factors: the 725 feet distance from the test well to the monitoring well; the volume of water pumped during the test relative to the size of a presumed aquifer; the variables of the aquifer's physical composition; and the timing of the test conducted in March when seasonal flows were higher. Mr. Williams concludes, however, that it is highly unlikely that a highly permeable connection exists between his well and the applicant's well. Rather than burden the applicant with disproving such a connection, he requests safeguards such as guaranteed water supply at the cost of the applicant in the event his well does run dry.

Response: Staff reviewed the letter from Mr. Williams and found the arguments compelling given the uncertainty around determining hydrologic connectivity of groundwater wells. For background, in accordance with Humboldt County Code Section 55.4.12.9, on January 22, 2020 staff requested results of a well pump test to determine the connectivity of the irrigation well to wells on adjacent parcels. Watson Well Drilling conducted a well pump test on March 26, 2020 and the results were provided on April 16, 2020 in accordance with this standard. The test well was located 725 feet away at a location known to have a well and where the applicant had approved access. Staff reviewed the Department of Water Resources Well Mapping Application and determined the well at 29650 Mattole Road to be the nearest well to complete the test. Both well completion reports showed screens from 20 to 100 feet through a blue clay/shale layer, which was interpreted to mean the two wells would draw from the same aquifer. The distance of 725 feet was considered adequate, and it was not known at the time that drinking water wells were located closer on the parcels to the north and east. The purpose of the well test is to determine connectivity, and as Mr. Williams' letter points out there are multiple factors that could have affected this determination. Based on

the limitations of the methodology, the well test may not have determined connectivity of the irrigation well to the adjacent properties of Williams and Bush. A qualitative analysis based on the history of cannabis cultivation on the property shows that past irrigation use in similar amounts has not resulted in well drawdown on nearby wells. Definitive quantitative results would require additional hydrogeologic study. In staff's view, requiring new professional studies would not necessarily provide useful data for better water management of this specific project. The ordinance includes a clause that if drawdown did occur at adjacent wells, a Special Permit is required and use of the well may be prohibited, limited, or subject to provisional approval and monitoring. In response to the neighbor's concerns, the applicant proposed 60,000 gallons of rainwater catchment storage in hard tanks in order to offset the use of well water during the summer months. The Zoning Administrator may choose to add conditions of approval further restricting or limiting use of the well.

2. Comments from adjacent landowner Robert Bush arguing the timing and location of test well are inadequate. He also states that because the amount of rainfall for the 2021 cultivation season is unknown, rainwater catchment storage tanks may not be filled.

Response: As discussed above, the purpose of the well test is to determine connectivity to adjacent wells and whether irrigation use would result in drawdown. Despite the limitations of the test methodology as described by John Williams, the results of the well pump test showed no drawdown of the test well. The comments from Mr. Bush argue that the test should be conducted during the summer months when there would be a lower water table. However, the test was preceded by eight hours of non-operation to maintain static water levels. The relative height of the water table at certain times of year would not be a significant factor in determining whether the static water level had changed. The estimated water use for the proposed cultivation operation is 132,500 gallons. The applicant is required to meter water usage for irrigation on a monthly basis and provide that data to the Planning Department. If water usage exceeds the estimated maximum, the applicant will be required to reduce the water usage or modify the permit. Based on NOAA average annual rainfall data in Petrolia using a conservative 60-70 inches, and a rain catchment surface area of 1,200 square feet on the covered horse barn, the estimated rain catchment is 45,000 to 52,300 gallons. With additional rainwater collected from guttered greenhouses plumbed to storage tanks, the amount of proposed water storage is reasonable.

3. Applicant's supplemental analysis of baseline water usage and rainwater catchment calculations. 9,000 square feet of cultivation occurred on the property between 2010 to 2018 and used approximately 117,000 gallons of water sourced from a 2nd well on the property. The well proposed for irrigation use was completed in 2018. The 2nd well located on the southwest of the subject property is located within 300 feet of adjacent landowner Robert Bush. This 2nd well is to be used for domestic water only and has no nexus to the cannabis operation. Upon annual inspection, staff will verify that there is no irrigation line from the 2nd well to the cultivation area.
4. Revised Site Plan received 11/30/2020 showing proposed location of 60,000 gallons in hard tank water storage of rainwater captured off roof of horse barn and guttered greenhouses.

John Williams
jgwill@frontiernet.net
11/30/2020

Stephen Luther
Humboldt County Planning and Building Department
By email

Dear Stephen,

Thanks you for sending me the report of the Watson Well pump test on the well at 29615 Mattole Rd, APN 105-081-011. This is of concern to my wife and me because of the possible effects of the use of this well for cannabis production on our well, in the adjacent property to the southeast (105-181-010).

Although I am not a groundwater hydrologist, I have a Ph.D. in Physical Geography and worked for years as a surface water hydrologist. I am also generally familiar with groundwater from my time on the board of the Monterey Peninsula Water Management District, since groundwater issues in the Carmel Valley were of great concern in the district. On that account, I paid close attention to various well tests, and to monitoring the effects of pumping on riparian vegetation.

With that background, I am underwhelmed by the well test because:

- Back of the envelope calculations show that the test would almost certainly not measurably affect the monitoring well;
- Conventional well tests are based on unrealistic assumptions that are seriously violated in this case, and the test was conducted at the wrong time of year;
- Simulations provide a simple alternative that probably is more informative than the well test, and is much less expensive for the applicant.

The well test checked for the effect of pumping the test well on a well in a nearby parcel owned by the person paying for the test, which is approximately twice as far away from the test well as ours. Relevant distances from the report or estimated using Google Earth are as follows:

Distance from the test well to the monitoring well	725 ft
Distance from the test well to our well	361 ft
Distance from the test well to a seasonal stream	886 ft

According to the Watson Well report, the test pumped 4,880 gallons, or 652.4 cubic feet, over 8 hours. Anyone with hydrological intuition would not expect this pumping to affect a well 725 ft away. To see why, consider a circular aquifer with a radius of 725 ft, bounded by an impermeable barrier, and estimate the change in water level over the area if 652.4 cubic feet of water were removed. Assuming that the available water in the saturated aquifer has a volume of 10% of the overall volume of the aquifer, a little arithmetic shows that, even if the effect of the pumping were spread evenly over the whole area, the water level would decline by only about 0.004 ft. If the available water were instead 0.01 of the volume of the aquifer, the decline would be 0.04 ft, or about half an inch. The well test reports depths rounded to feet, and would have missed such a decline. In fact, the drawdown would be concentrated near the well.

To be a bit more sophisticated, you could use simulations. A simple simulation is available as a calculator on the website of the Office of the State Engineer of New Mexico. A screen shot of the calculator is pasted in below, as is the web address.

Please select the parameter to be determined and enter the the other parameter values:

- Transmissivity gpd/ft ft²/d
- Storage Coefficient
- Pumping Rate gpm acre-ft/yr
- Time years days
- Distance feet miles
- Drawdown (feet)

Calculate

<https://www.ose.state.nm.us/Hydrology/Theis/index.html>.

To use the calculator, enter plausible values for the transmissivity,¹ and values for all but one of the other variables; the calculator will return the final variable. In this case, for example, you could evaluate whether a pump test would be worth doing by entering a range of plausible values for transmissivity and the storage coefficient, plus the distance between the wells, and pumping rate, and the time (0.33 days). For the values I tried, it returned a drawdown of zero.

2. Conventional pump tests, and the calculator, assume that the aquifer is isotropic, or homogeneous in all directions. This is always more or less unrealistic, and seriously so for the aquifer in question. Presumably, the valley fill in the lower Mattole was deposited as sea level rose rapidly at the end of the last ice age, so that the fill probably consists of gravelly stream channels within a matrix of finer grained sediments. Depending on the details of the depositional environment, this can create ribbons of high conductivity, and the effects of pumping a well penetrating one of these can extend much farther than you would expect. I saw a dramatic case of this in the lower Carmel Valley, where the water level declined more in a more distant well than in nearby ones. In this case, there must have been more a ribbon of depression rather of a cone of depression.

As another kind of complication that also occurred in the Carmel Valley, landslides or debris flows that spread out over alluvium as a valley is filling can create layers of very low permeability, creating locally perched water levels. I do not know whether there are such buried layers in our area, but the surface material on our lot and at the site of the test well is clearly landslide debris, with alluvium underneath. Similarly, during the 1906 earthquake, there was a landslide a bit farther down the valley that presumably spread some distance over the valley floor. There may well have been similar landslides or debris flows as the lower Mattole Valley was filling.

As a final complication, there is a seasonal stream ~885 ft north from the test well. The test was conducted on January 26, and based on Mattole River discharge at the Near Petrolia gage, it seems clear that the seasonal creek had been flowing for six or more weeks. Hence, probably there was a north-south groundwater gradient from under the seasonal stream to the test well,

¹ The calculator balks at values that are much too high.

so more groundwater water would flow to the test well from the north than from the SW, the direction of the monitoring well.

Finally, the transmissivity of an aquifer depends on the depth of the saturated layer multiplied by the conductivity, and in this area the saturated layer is thicker in the wet season than in the dry season, when most pumping will occur. This can matter a good deal if the aquifer is shallow, as it is under our well, so that doing a pump test in the winter a bit like doing a perc test in the summer.

Turning to our well, estimates using the calculator indicate that pumping 132,500 gallons (the estimated seasonal use) will have a negligible effect. However, it is possible, although highly unlikely, that a highly permeable connection exists between our well and the test well, like the lower Carmel Valley example mentioned above. Our well has served us without problems for nine years, so if we run short of water while the test well is being used for cannabis production, it would be reasonable to infer that such a connection exists. However, asking the applicant to disprove such a connection would be a major burden; it seems more reasonable simply to add a permit condition requiring the applicant to provide us with water for our house and existing garden, if our well runs out of water (the test well is deeper; our was drilled to 100 ft, but there was no water below ~50 ft). Again, the probability that this will happen is very small, so this is not asking a lot.

Again, thank you for sending me the well test, and for giving me the opportunity to comment on it. Finally, my comments are not a criticism of Watson Well; they were doing what they were asked to do.

Sincerely,
John Williams

Dear committee my concern about the permit application is based upon facts presented in the submitted application.

First concern:

The application referred to well draw down test taken in March of 2020 comparing the on-site well to a well 700 feet away. There is a residential well located at 29469 Mattole road which was not tested and is closer than 700 feet away from the applicate site well. The well that was tested is located closer to the mattole river and would not be a reasonable and equitable measure of the impact of the agriculture application that would be pumping an estimated 135,000 gallon of water per year. I feel that the permit applicate should incur due diligence to locate and test residential water wells adjacent to the proposed site (property adjacent to the well site on the east side owned by Mr. Williams).

Second concern:

Per the documents submitted the Water well draw down test was conducted in March 2020. The submitted documents show an estimated usage of 135,000 gallons per season with no listing of a maximum usage. My concern is that in all outdoor seasonal agricultural/cannabis the water usage would be at it's greatest usage during the summer months of July, August and September. This water usage is due to mature plants (corn/soybean included) and the higher temperatures of the summer months causing greater soil and plant evaporation.

Additionally it is very common and a truism that the water table does become lower during the summer months (I have a onsite well with a three foot concrete casing that I can observe water level decreasing through the summer and the well is unused). The factor of greater water usage in the summer season coupled with lower water table levels creates a situation where a well draw down test conducted in the month March is an invalid test and should be viewed as flawed and therefore not acceptable.

My proposal:

Postpone approval of APN-105-081-001-000 until July/August 2021 until a valid well draw down test can be done comparing the application site to residential wells at 29469 Mattole Road and other applicable residents within the 700 foot radius.

All residences adjacent to the proposed agricultural farm should not have their Water resources negatively impacted for quality of life and forest fire suppression (as the August Complex Fire of 2020 has shown).

Thank you for your time and patience,

Robert Bush

Follow-up email:

Thank you for your quick response to my comments concerning APN-105-081-011-000.

Please include my response below to the documents submitted for the December 3rd, 2020 meeting concerning APN-105-081-011-000 Fort Apache LLC

The addition of 60,000 gallons of water catchment tanks is problematic for the reasons listed below:

1) The 2020-2021 rainfall total is unknown as that we have not received any substantial rain fall and the water tanks have not been installed. It is not certain that Humboldt County will receive enough rainfall to fill the tanks. So we can not count the 60,000 gallons as being correct.

2) The 135,000 gallon usage listed in the permit application is an estimate without a maximum usage allowed by Humboldt County. Humboldt County does not have a water district manager who would allocate water usage based upon rain fall after the rainy season and this allocation is being done prior to knowing the future water resources available. So therefore we do not know what the future water table level will be.

3) The lack of testing on residential water wells that are much closer than the "test well 700 feet away" still is a major problem that has not been addressed.

4) The test of a Water well for draw down was done at the highest possible water table level. March 2020 Water well testing does not reflect the lower water table levels during peak agricultural usage during the months of July, August, September and October.

July, August, September and October are peak Wildland Fire season and adequate water resources for all residents are necessary for fire suppression and quality of life.

In summation:

The addition of 60,000 of water storage does not negate the facts of well testing during the improper time of the year (March high water table level). Lack of due diligence to test known residential water wells closer than the well tested and coupled with a lack of a firm maximum water usage for the permit application. The factors listed above make it necessary and prudent for the Humboldt County Planning Commission to postpone approval of APN-105-081-011-00 until July/August of 2021 when a water well draw down test at 29469 Mattole Road and any water wells within 700 feet of the onsite water well.

The document submitted is a clear statement of facts that support my position that APN-105-081-011-000 should not be approved.

Best regards,

Robert Bush

29469 Mattole Road
Petrolia, California 95558



Water Usage Supplemental
Ft. Apache LLC
Apps#15369
November 30, 2020

This supplemental has been prepared to compare water usage in the pre-existing baseline conditions to the proposed cultivation operations on the premise.

Approximately 117,000 gallons of water was utilized in the pre-existing conditions.

Approximately 132,500 gallons of water is proposed to be utilized in the proposed conditions. This water usage will be mitigated by storing approximately 60,000 gallons in water tanks pumped during the wet weather season for a net dry season aquifer demand of 72,500 gallons.

As a result, there should be a net reduction in dry season water demand on the aquifer of 44,500 gallons from the baseline condition. A further off-set is achieved by capturing rainfall from the roof of the barns which can generate another 20,000 gallons of dry season demand but this will depend on seasonal rainfall.

Pre-existing Operations Water Use (2014)

Pre-existing canopy totaled approximately 9,000 square feet of light deprivation canopy in 2014 (see historic beds exhibit).

This analysis presumes a water usage estimate of 13 gallons per square foot per season for greenhouse cultivation.

9,000 square feet X 13 gallons/square foot = 117,000 gallons per season

Proposed Operations

A total of 9,984 square feet of canopy is proposed. Total water usage is approximately 132,500 gallons (~13 gallons per square foot)

A total of 60,000 gallons of water storage is proposed which will mitigate usage during the dry weather season

132,500 – 60,000 = 72,500 gallons of water use from the well.

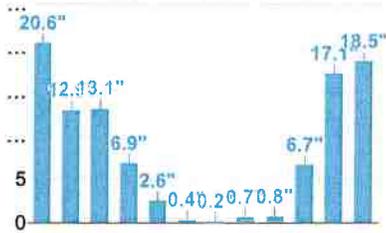
Furthermore, the tanks will be plumbed into the roof of the existing barn and canopy for a total of 1,800 square feet of roof catchment area.

Using historical rainfall averages from a local rainfall gage, the well water use can be reduced to approximately 50,000 gallons but this will vary based on the timing of seasonal rainfall.

	January	February	March	April	May	June	July	August	September	October	November	December
Days/Mo	31	28	31	30	31	30	31	31	30	31	30	31
Starting Volume	60,000	60,000	60,000	60,000	60,000	47,920	28,369	3,594	0	0	0	19,204
Avg Rainfall (in)	20.6	12.9	13.1	6.9	2.6	0.4	0.2	0.7	0.8	6.7	17.1	18.5
Rainfall Input (gal)	23,113	14,474	14,698	7,742	2,917	449	224	785	898	7,517	19,166	20,757
Irrigation Use (ML)	0	0	-2,500	-7,500	-15,000	-20,000	-25,000	-25,000	-25,000	-12,500	0	0
Well Input								20,620	24,102	4,976		
Ending Volume	60,000	60,000	60,000	60,000	47,920	28,369	3,594	0	0	0	19,204	39,979

Average rainfall
Honeydew, CA

Rainfall (") - Honeydew, CA



Average rainfall in January: 20.6"
Average rainfall in February: 12.9"
Average rainfall in March: 13.1"
Average rainfall in April: 6.9"
Average rainfall in May: 2.6"
Average rainfall in June: 0.4"
Average rainfall in July: 0.2"
Average rainfall in August: 0.7"
Average rainfall in September: 0.8"
Average rainfall in October: 6.7"
Average rainfall in November: 17.1"
Average rainfall in December: 18.5"
The wettest month (with the highest rainfall) is January (20.6").
The driest month (with the lowest rainfall) is July (0.2").

FT. APACHE, LLC

SPECIAL PERMIT

APN 105-081-011-000



DIRECTIONS TO SITE:

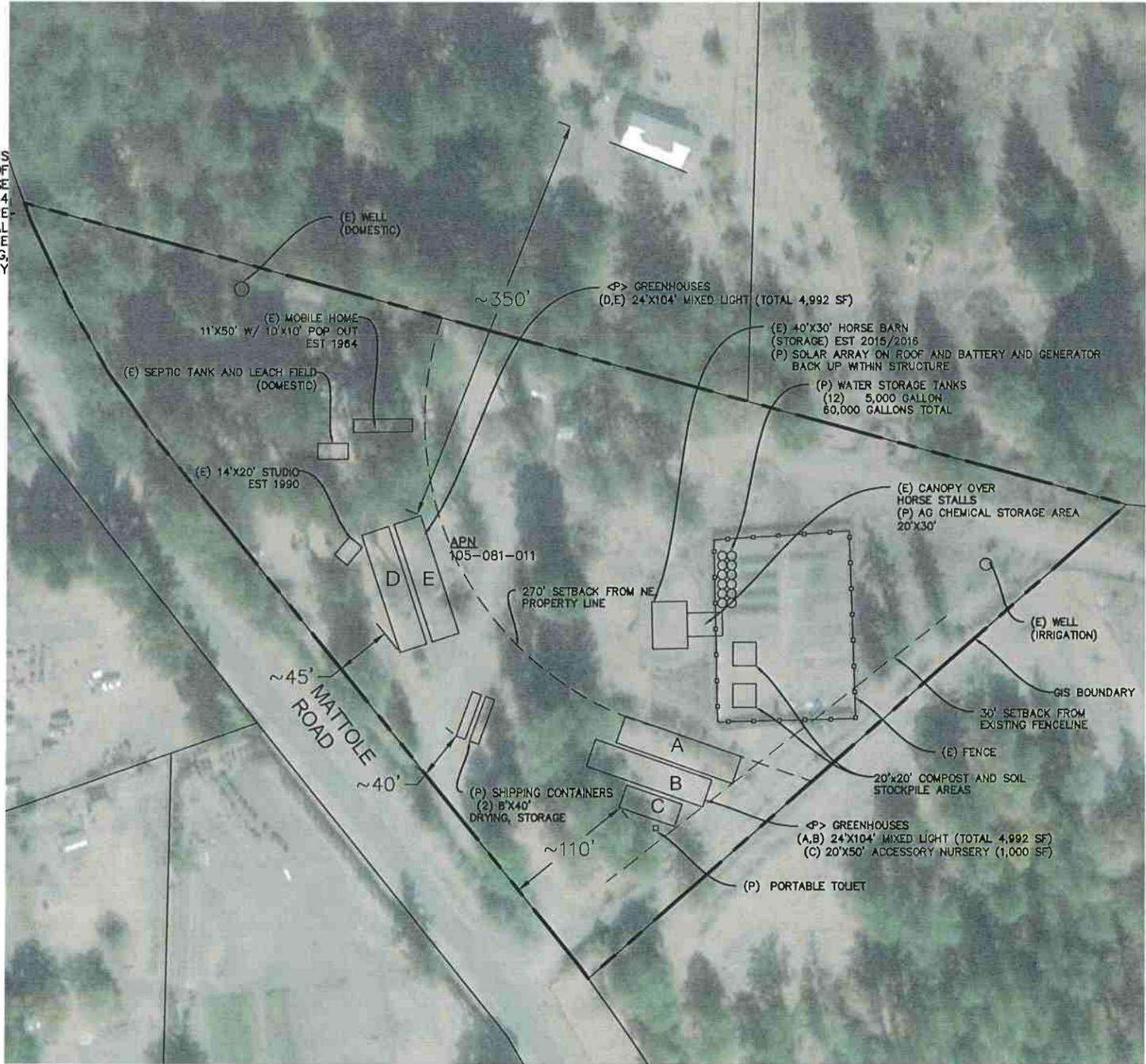
- FROM EUREKA, CA
- SOUTHBOUND ON US-101
- (APPROX. 51 MILES)
- TAKE EXIT 692 TOWARDS FERDALE
- TURN RIGHT ONTO SINGLEY ROAD
- TURN RIGHT ON CA-211 S
- TURN RIGHT ONTO BLUFF ST/OCEAN AVE
- TURN LEFT ONTO WILDCAT AVE/MATTOLE ROAD AND FOLLOW FOR 28.3 MILES
- CONTINUE ONTO FRONT STREET (PETROLIA)
- TURN RIGHT ONTO MATTOLE ROAD (0.5 MILES) DRIVEWAY ON THE LEFT

PROJECT DESCRIPTION:

FT. APACHE, LLC IS PROPOSING TO PERMIT PROPOSED CANNABIS CULTIVATION ACTIVITIES IN ACCORDANCE WITH THE COUNTY OF HUMBOLDT (COUNTY) COMMERCIAL CANNABIS LAND USE ORDINANCE (CCLUO). THE PROPOSED OPERATION INCLUDES 9,984 SQUARE FEET OF MIXED LIGHT CULTIVATION AND 1,000 SQUARE FEET OF ACCESSORY NURSERY SPACE. THE PROJECT PROPOSAL INCLUDES THE DEVELOPMENT OF FACILITIES APPURTENANT TO THE CULTIVATION, INCLUDING GREENHOUSES, FACILITIES FOR DRYING, CURING, GRADING OF CANNABIS. IRRIGATION WATER PROVIDED BY A PRIVATE WELL.

GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. SL CONSULTING SERVICES INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY.
3. THERE ARE NO NEARBY SCHOOLS, SCHOOL BUS STOPS, PLACES OF WORSHIP, PUBLIC PARKS OR TRIBAL RESOURCES WITHIN 600 FEET OF THE PROPOSED CULTIVATION AREA.
4. THERE ARE NO RESIDENCES ON ADJOINING PARCELS WITHIN 300 FEET OF THE PROPOSED CULTIVATION AREAS.
5. ANY EXISTING DEVELOPMENT CONSTRUCTED WITHOUT THE BENEFIT OF COUNTY REVIEW WILL BE SUBJECT TO THE HUMBOLDT COUNTY BUILDING DEPARTMENT UPON APPROVAL OF THE SPECIAL PERMIT.



PROJECT INFORMATION:

APPLICANT:
 FT. APACHE, LLC
 451 CONKLIN CREEK ROAD #203
 PETROLIA CA 95558

PROPERTY OWNER:
 EVELYN R SMITH
 PO BOX 170
 PETROLIA, CA 95558

OWNERS AGENT:
 SL CONSULTING SERVICES INC
 973 DOWLER DR
 EUREKA, CA 95501
 (707) 440-9033

SITE ADDRESS:
 105-081-0011-000
 29615 MATTOLE RD
 PETROLIA, CA 95558

- TREES TO BE REMOVED = NONE
- PROPOSED CULTIVATION AREA = 9,984 SQ. FT.
- EARTHWORK QUANTITIES = TBD
- WATER = PRIVATE
- SEWER = PRIVATE
- PARCEL SIZE = ±6.5 ACRES
- ZONING: = U
- GENERAL PLAN DESIGNATION = RA5-20
- SRA AREA: = YES
- IN COASTAL ZONE: = NO
- IN 100 YR FLOOD ZONE: = NO

PLOT PLAN

22x34 SHEET: 1"=20'
 11x17 SHEET: 1"=40'



FT. APACHE LLC APN 105-081-011
 29615 MATTOLE ROAD, PETROLIA CA 95558
 PLOT PLAN, VICINITY MAP AND PROJECT NOTES

PROJ MGR:	SR
PROJ ASSOC:	SR
DRAWN BY:	SR
DATE:	10-19-2020
SCALE:	AS SHOWN
CO	

November 24, 2020 10:15 AM C:\Shared\48363\SL_Consulting_Services\Projects\105-081-011-000\105-081-011-000_PlotPlan.dwg